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Evaluation of a Community Group Weight Management Scheme:

Are Outcomes Influenced by Who Delivers it?

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Declaration

This work is original and has not been previously submitted in support of a degree, qualification or other course.

Signed.....

Date.....

Acknowledgements

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Evaluation of a community group weight management scheme:

Are outcomes influenced by who delivers it?

Abstract

Purpose

To investigate if clinical outcomes, attendance rates and the demographics of patients vary according to the type of health worker who delivered a primary care group weight management scheme.

Method

An observational, retrospective evaluation: a before and after analysis of twelve week group weight management programmes. A dataset containing 974 suitable entries was examined according to three cohorts of primary care health workers; administrative assistants (AA), health care assistants (HCA) and nurses. Comparisons between these worker groups included:

- differences in worker outcomes for weight, waist circumference, body mass index (BMI), and blood pressure after 12 weeks,
- percentage attendance at week 12,
- gender, age, ethnicity and the registered general practice (GP) indices of multiple deprivation score (IMD) of patients who enrolled.

Results

Patients seen by personnel in health assistant roles lost more weight (-1kg, $p=0.008$) lowered their BMI (- 0.3 kg/m², $p=0.008$) and decreased their waist circumference (-2cm, $p<0.001$) significantly more than those seen by nurses. Poor data entry for blood pressure recordings hampered analysis of this outcome. Attendance was 38% and not significantly different between any workers ($p=0.444$). Those who completed the programme were predominantly white (99.5%) women (82%), significantly older (median age 61years compared to 57 years, $p<0.001$) and from GP practices with significantly lower IMD scores (27.3 compared to 31.5, $p<0.001$). Patient characteristics were generally similar, irrespective of the deliverer.

Conclusion

Health care workers in supporting clinical roles were able to help patients achieve greater weight loss outcomes than nurses. High levels of erroneous and missing clinical data were problematic for less qualified deliverers and indicative of a lack of more advanced clinical abilities. High attrition and limited appeal were difficulties for all three health worker groups and jeopardised the overall efficacy of the scheme.

Group interventions, health workers, weight loss, efficacy.

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1. INTRODUCTION

Being overweight or obese is a long-standing and familiar problem, worldwide. It has profound effects on health. Excess body fat is thought to be responsible for five percent of global mortality (World Health Organisation [WHO], 2009) and can cost a middle aged casualty up to ten years of life (Prospective Studies Collaboration, 2009), the greatest risk of death is from cardiovascular disease, cancer and diabetes (Flegal, Graubard, Williamson & Gail, 2007). Besides the increased risk of death, excessive fat is also a strong predictor of many health consequences including hypertension, diabetes, metabolic syndrome, stroke, coronary artery disease, respiratory disease, cancers, osteoarthritis, liver disease, and psychosocial detriments (Butland et al., 2007; Kopelman, 2007; Haslam & James, 2005). What is more, many of these co-morbidities are not isolated to adults - overweight and obese children are exposed to similar health misfortunes (Lobstein, Baur & Uauy, 2004).

1.1 Measuring the Risk

In research and clinical practice, body mass index (BMI) is the most commonly used method of measuring excess body weight. This 'index of fatness' is calculated by dividing a persons' weight (in Kg) by the square of their height (in metres). The greater the BMI score, the greater the risk. The WHO (2003) has given definitive cut off points for overweight, obesity and grades of obesity so as to make predictions of health risk (see Table 1-1).

Where excess fat is carried is as important as how much (WHO, 2003). Mounting evidence suggests that visceral fat stores in the abdominal region are linked to metabolic syndrome, a collection of medical conditions associated with increased

risks of cardiovascular disease and diabetes, risks that are independent of BMI (National Obesity Observatory [NOO], 2009a).

Waist circumference measurement is a practical and convenient means of estimating abdominal fat. Threshold values for this have been established for both male and females. Together with BMI, it provides a powerful prediction of diabetes and cardiovascular risks (NICE, 2006). See Table 1-2.

WHO Classification	BMI Range	Risk of Co-morbidities
Overweight	25–29.9	Increased
Obese class I	30.0 – 34.9	Moderate
Obese Class II	35.0 – 39.9	Severe
Obese Class III	>40.0	Very Severe

(Adapted from WHO, 2003)

Table 1-1: Use of BMI to classify the risks of co-morbidities.

	Men	Women	Risk of Co-morbidities
Waist Circumference (cm)	94-102	80 -88	Increased
	>102	>88	

(National Institute for Health and Clinical Excellence [NICE], 2006)

Table 1-2: Use of waist measurements to classify the risks of co-morbidities

1.2 Global and National Rates of Obesity

Obesity intrudes on both developed and undeveloped countries. The International Obesity Task Force (IOTF) estimated that obesity affected 312 million people in 2008, with 1.1 billion adults overweight throughout the world (International Association for the Study of Obesity [IASO], 2008). Soaring increases are being witnessed in Europe, and closer to home in the UK (IOTF, 2008). Within the last

twenty years the proportion of adults with obesity in the UK has tripled (Butland et al., 2007) and earned the country one of the top places in EU's unwelcome obesity league (NOO, 2009b; Organisation for Economic Co-Operation and Development, 2009). In 2007, approximately fifty percent of men and women in Britain were classified as having a raised waist circumference and therefore at risk of developing diabetes and heart disease (NOO, 2009a). Other recent estimates suggest twenty four percent are already obese; sixty one percent overweight (Department of Health [DoH], 2010).

Forecasters offer little optimism. Globally, 700 million people are predicted to be obese and 2.3 billion to be overweight by 2015 (WHO, 2006). In the UK, by 2050 the majority of the population will be overweight, and about sixty percent will be obese. People will pay the price for these drastic increases with their health – if predictions for 2050 are accurate, rates of diabetes are expected to increase by a massive seventy percent, coronary heart disease by twenty percent (Butland et al., 2007).

1.3 Economic Cost of Excess Weight

Since many of obesity's co-morbidities are a lifelong burden, the implications of the forecasted rates are considerable and carry serious financial implications for government health budgets. In the UK, the disease's health consequences cost the National Health Service (NHS) £1billion annually, with wider society footing a bill of £10 billion due to the additional cost of sickness and absence from work (Butland et al., 2007). The condition could potentially cost the country £6.5billion for treatment alone and society £45.5 billion by 2050 (Butland et al., 2007). This prediction supports an earlier warning from a key government health advisor that unless the

prevalence of obesity is decreased, it has the potential to drain the NHS financially (Wanless, 2002).

1.4 Causes of Excess Weight Gain

Although there are a select few unfortunate to inherit a genetic predisposition to obesity, for the overwhelming majority excess weight gain occurs because of an energy imbalance - a combination of eating too much and doing too little (Lau et al., 2006).

Activity levels are decreasing across the world (WHO 2010) and in the UK (DoH, 2010). Recommendations for minimum levels of activity are now necessary. The UK government encourage people to achieve a minimum of thirty minutes of moderate activity, five or more days per week (DoH, 2005a), yet sixty to seventy percent of adults in England fail to reach this (The NHS Information Centre for Health and Social Care, 2009).

Unfortunately, complementary changes to eating habits have not accompanied this more sedentary lifestyle. Energy consumption has been on the increase for some time. A high intake of energy dense foods, large portion sizes and eating outside the home are considered the greatest contributors (WHO, 2003). This 'double edged' challenge to energy equilibrium helps explain the spiralling problem.

1.5 Benefits of Weight Loss

The concept of restoring energy balance by eating less and doing more is simple and convincing evidence that weight loss improves co-morbidities supports the

approach. A paper produced in 1998 by the Royal College of Physicians (Royal College Physicians, 1998) summarises the benefits of ten percent weight loss – a 10mmHg reduction in blood pressure, fifty percent reduction in risk of diabetes and a fall of ten percent in total cholesterol. Five percent loss of body weight has been reported to reduce the odds of developing metabolic syndrome by as much as fifty nine percent for some (Phelan et al., 2007). These benefits have led to recommended losses of between five and ten percent of original body weight (NICE, 2006) and are generally considered clinically significant.

1.6 Strategic Direction and Policy

Commitment to tackling the issue of obesity in the UK has been displayed in a wave of publications. The ‘Choosing Health’ White paper in 2004 (DoH, 2004) and its subsequent action plans (DoH, 2005a, 2005b, 2005c) heightened awareness of the problem. In the same year, the Royal Colleges of Physicians (2004) reiterated the government’s messages that obesity was a considerable problem in a dedicated report. A Foresight report from government, ‘Tackling Obesities: Future Choices’ (Butland et al., 2007) was the first to recognise the multifaceted complex nature of obesity, and introduced the concept of ‘obesogenic environments’ that need to be confronted. This new appreciation of the wider influences of society continues to influence more recent publications (DoH, 2010; DoH, 2008; DoH, 2006) and emphasis has been placed on multicomponent interventions as the way forward (DoH, 2006; NICE, 2006).

1.7 Tackling the Problem

There is little doubt that bariatric surgery is the most effective treatment for lifelong weight loss. It has been estimated it can reduce excess body weight by 60% or more depending upon the procedure (Buchwald et al., 2004). However, with an increasing number of people affected, and continuing financial pressure on National Health Services, surgery for obesity is unlikely to be a realistic option for the millions of people who fall within the current government guidelines for it (NICE, 2006).

The best support most can hope for is that offered by non-surgical interventions. The use of medication has been a popular option since evidence revealed it to produce a significant weight loss (Avenell et al., 2004). However, concerns over serious health implications have led to the withdrawal of the most popular pharmacotherapy options, and left a very limited choice for UK prescribers. Also, scepticism regarding the clinical significance of the resulting weight loss against prescribing costs (Foxcroft & Milne, 2000) suggests the exclusive use of prescribed medicine to treat the epidemic of obesity in Britain is still some way off.

1.8 Group Weight Management Interventions

The limitations of surgical and pharmacological treatment steers the focus onto lifestyle modifications as a more realistic option for most people. Diet, exercise and behaviour modification interventions have all been shown to be effective to some degree, with the greatest results seen when a combination of all three are used (Avenell et al., 2004). Some research into the best way to relay weight loss messages has taken place and there is now welcome evidence that group lifestyle interventions produce better outcomes than one to one instruction (Paul-

Ebhohimhen & Avenell, 2009). Besides the promise of better weight loss, group work also has the potential for resource cost savings and additional opportunities for individuals to access support. These reasons have made it a popular choice of service provision in community settings within the UK (NICE, 2006).

Delivery in primary care has obvious advantages. It has been estimated that seventy eight percent of people will consult their general practitioner at least once in a year (The NHS Information Centre for Health and Social Care, 2009b). Obese patients attend clinics even more frequently (Counterweight Project Team, 2008a). These regular exchanges, in a local and familiar environment are ideal for identifying and delivering weight management treatment interventions.

While group work might be a better option for many, there is surprisingly little evidence as to why this might be the case. Despite the abundance of government reports and guidance documents for obesity, the finer details of what comprises effective interventions are surprisingly limited. There is currently no direction on particulars such as optimal programme length, content, contact frequency, group make up and size; all have escaped detailed and extensive research (Flodgren et al., 2010).

1.9 Literature Review

It has been speculated that who delivers health messages is likely to be the singularly most important influence on weight loss results (Lean, 1998) and that successful outcomes depend on knowledge (Counterweight Project Team, 2008b) as well as on personal characteristics (Wadden, 1993). Yet the deliverer of group

weight management programmes has received as little attention as other details of delivery, despite its considerable significance to resource costs.

A review of group work outcomes according to health worker is challenging due to the scarce number of published papers, the quality of these studies and the disparate selection of health workers authors choose to compare. Systematic reviews specifically on weight management interventions rely mainly on individual consultation methods, rather than group intervention, to draw their conclusions and offer no suggestions on who might be superior (Harvey, Glenny, Kirk & Summerbell, 2009; Flodgren et al., 2010). One review found seven studies that investigated the effectiveness of lifestyle interventions in primary care (Fleming & Godwin, 2008). Five of these studies used practice nurses to deliver health messages and the other two used physicians and exercise specialists. The results showed no significant difference in outcomes, suggesting these professional groupings have no bearing on the successful communication of messages.

Individual studies comparing one professional group to another are conflicting. One report suggests that there are likely differences between psychologists and nurses (Atkinson et al., 1977); another suggests that primary care nurses can achieve similar results to psychologists after a little training (Balch & Balch, 1976). In a systematic review, Paul-Ebhohimhen and Avenell (2009) concluded that psychologists who used advanced skills in group behaviour change therapy achieved 3kg weight loss, twice as much as the dietitians in the review. Willaing, Ladelund, Jørgensen, Simonsen, and Nielsen (2004) compared weight loss achievements of 339 patients over 12 months following dietary counselling delivered by either

dietitians or general practitioners. The dietitians managed 4.5kg weight losses, significantly more ($p=0.02$) than the doctors who achieved mean losses of just 2.4kg. Yet, a study by Olsen, et al. (2005) implied that dietitians were surprisingly less cost effective than their GP counterparts, when weight change was translated into life years gained. Pritchard, Hyndman and Taba (1999) provide another comparison for consideration; counselling sessions delivered by a dietitian plus a doctor offer the greatest efficacy with average weight reductions of 6.7kg, although the difference between this reduction and that achieved by dietetic advice alone (5.6kg) was not a significant one.

Studies investigating group outcomes by a single professional are less confusing and point to remarkably similar conclusions. A small community study reported about 5 kg weight losses over three months after delivery by an assigned health visitor (Jackson, Coe, Cheater & Wroe, 2007). Another primary care intervention by Read, Ramwell, Storer and Webber (2004) reported that dietitians achieved 3kg of weight loss in the same time frame. Cleanthous, Noakes, Keogh, Mohr, and Clifton (2007) showed that dietetic effectiveness is both short and long term, with weight loss maintenance for up to one year.

Practice nurses have also proved their worth. A large randomised controlled trial to determine the effectiveness of health checks by nurses in primary care produced significant BMI reductions ($p< 0.05$) for up to three years (OXCHECK Study Group, 1995). This finding has been reiterated more recently by the Counterweight Programme, an intervention that trained practice nurses in weight management in 65 general practices from seven UK regions (Counterweight Project Team, 2008b). The

project reported a mean weight reduction of 3kg after one year, with one third of completers achieving a clinically significant result. Another randomised controlled trial by Nanchahal et al. (2009) also recruited and trained nurses and report mean losses of 4kg in three months.

Older literature suggests that skilled health professionals produce better results in the longer term than lay workers (Perri et al., 1987) even when less clinically qualified people have been trained (Levitz & Stunkard, 1974). But recent evidence suggests that health assistants and lay people are as capable as more highly trained staff (Jebb et al., 2010; Pallister, Avery, Stubbs, & Lavin, 2008; Rock, Pakiz, Flatt, & Quintana, 2007). Commercial slimming organisations which deliver slimming on referral schemes in primary care rely on 'expert weight losers' as opposed to 'expert knowledgeable clinicians' and provide a means of comparing outcomes by deliverers with fewer health qualifications. Interestingly, favourable weight losses of between 4 and 7kg for periods up to one year have been reported (Jebb et al., 2010; Pallister, Avery, Stubbs, & Lavin, 2008; Rock, Pakiz, Flatt, & Quintana, 2007). There is more impartial evidence from a clinical environment that lay worker delivery works. Tsai et al. (2009) conducted a randomised controlled trial in primary care of weight loss outcomes by staff with less clinical qualifications. The authors reported that medical assistants achieved a comparable mean weight loss of over 4kg after six months intervention.

Collectively, these studies seem to indicate that people with fewer health qualifications are equally well equipped to produce meaningful weight loss outcomes for patients in primary care settings. If there is little or no difference in weight loss

outcomes between those of different clinical abilities, then there are strong economic reasons for reconsidering who does what in primary care weight management interventions.

1.10 Why this Evaluation is Important

The evidence base for who is best placed to deliver weight management interventions is inadequate. Programmes are currently delivered by a range of people in the health service with varying clinical abilities. This evaluation of group weight management programmes according to the type of health worker who delivered them could provide service planners with an insight into how facilities can be organised for optimal clinical effectiveness as well as financial efficiency. Additional investigation of the demographic and social characteristics of service users could provide important insights into which people benefit most from group weight loss programmes and how services might be tailored to target and appeal to the local population.

1.11 County Durham, Darlington and its People

County Durham and Darlington is an extensive area, with a mix of both urban and rural populations. While there are several main towns, more than half the population live in rural locations, many of which are former colliery villages. There is a higher percent of pensioners (20%) than there are nationally (18.5%) and a very low number of people from ethnic minority groups, estimated to be only 1.2%, compared to 8.7% for England overall (Robinson, 2007).

Deprivation is commonplace in the area. A common national tool to measure deprivation is Indices of Multiple Deprivation (IMD). Estimated averages of IMD for England are 21.7, on a scale that ranges from one through to ninety, with higher scores denoting greater deprivation. Both Darlington and County Durham compare poorly with the country's average, with scores of 24.2 and 27.1 respectively (Noble, McLennan, Wilkinson, Whitworth & Barnes, 2008). This may be partly due to the high incidence of unemployment. Around fifty eight percent of County Durham's people are either manual workers or claiming benefits, with unemployment highest in the former coalfields (Durham County Council, 2005). Despite the overall discouraging picture, the area offers substantial variations in IMD. A number of relatively affluent areas exist in Durham City, Darlington and across some of the more rural patches with IMD scores as low as 8 (Association of Public Health Observatories, 2011), generating an overall area with considerable contrasts.

This social and economic picture has important implications on the health of local people. The North East of England is a national black spot for health - life expectancy, incidence of diabetes, death rates from cancer, heart disease and strokes are significantly worse than those experienced nationally (DoH, 2010). The regional obesity rate of twenty eight percent (Ells, 2008) is probably an important contributor and local predictions for the condition are not encouraging. Seventy percent of the areas' men and women could be carrying dangerously high levels of excess fat by 2050 (Ells, 2008), ten percent higher than an already troubling national forecast. Considering the established links between obesity and ill health, immediate

and effective weight management strategies in County Durham and Darlington could not be more important.

1.12 Background to the Study

In 2005, County Durham and Darlington Primary Care Trust (PCT) recognised the alarming levels of obesity and responded with the production of a comprehensive strategy for the prevention and management of the crisis in the area (County Durham and Darlington Primary Care Trust, 2005). The document highlighted what needed to be done and suggested a menu of treatment strategies, with primary care weight management programmes featuring most conspicuously. The document also emphasised the importance of detailed evaluation of new and existing interventions. Public Health professionals within the PCT acted on these recommendations by developing a local initiative, 'Weight No More'.

'Weight No More' aimed to offer more adults the opportunity to attend weight management programmes, free of charge, in additional locations in primary care. To ensure a quality programme was delivered, the scheme offered all General Practice staff in the locality the opportunity to be trained in weight management to a nationally recognised standard. A series of two day training events were delivered across the locality by registered dietitians and health development workers, to the standard of National Open College Network (NOCN), level two. Learning outcomes focused on nutrition knowledge, national dietary recommendations and the ability to plan an information-based weight loss programme for patients. Appendix 1 details NOCN course learning outcomes and assessment criteria. On completing the training, all

staff wishing to be accredited were required to compile a portfolio of their learning and submit this to NOCN for assessment.

Creation of the Database

During the training events staff were introduced to and instructed on the use of a PCT-wide database. The database was designed to capture the demographics and the progress of all participants who enrolled onto weight management programmes in primary care. Accredited staff were assigned a personal code which allowed access to the secure centralised system. They were encouraged to record the details of any interventions they delivered via a financial incentive, allocated to the employing GP practice. To gain this monetary reward it was stipulated that individual interventions had to be a minimum of 12 weeks long and that a prearranged dataset was completed for each participant. This included anonymous patient demographics, anthropometric and clinical measures, and some delivery particulars at week one. Progress and attendance information was also required at weeks six and twelve. Appendix 2 outlines the data collected. All information was entered into the online system which was stored and managed centrally by County Durham and Darlington PCT.

Data collection began on 1st April 2009 until 31st March, 2010. Patient recruitment occurred any time over this fifty two week period.

Eligibility

All staff from all 86 GP practices within County Durham and Darlington PCT were invited to participate in the 'Weight No More' Scheme but only staff who completed

the mandatory training in weight management and achieved accreditation contributed to data collection. Database entries had to be registered patients with a GP practice in County Durham or Darlington, be eighteen years or older, and have a BMI of at least 25 kg/m² at the start of the programme. There were no other exclusion criteria.

Participating practices were individually responsible for the recruitment of suitable patients within their own location. The content of programmes was not fixed, recorded or monitored. This was entirely at the discretion of the delivering health worker, although it was anticipated that patients would be educated, encouraged and supported in accordance with the training staff had received.

The 'Weight No More' reward scheme resulted in a comprehensive collection of information intended for detailed surveillance and to help inform future efficiency and effectiveness of weight management programmes in County Durham and Darlington. It is part of this database that was used to inform the current study.

2. METHOD

2.1 Study Design

An observational, retrospective evaluation of work in practice: before and after analysis of twelve week group weight programmes in primary care. Clinical Outcomes, attendance and patient characteristics were assessed according to three cohorts of health workers.

Dependant Variables: Weight, BMI, waist circumference, systolic and diastolic blood pressure, attendance, gender, age, ethnicity, and IMD.

Independent variable: Health Worker Group

Study Aim

To compare the effectiveness of group weight management programmes delivered by different primary care health workers in County Durham and Darlington.

Primary Objective

To investigate whether the type of health worker who delivers twelve week group weight management programmes has a bearing on weight, BMI, waist circumference and blood pressure outcomes of participants.

Secondary Objectives

Examine whether attendance rates differ between various workers.

Explore if the people who enrol for group weight management programmes differ between workers according to their age, gender, ethnicity, GP practice IMD score as well as baseline weight, BMI, waist circumference and blood pressure.

2.2 Hypothesise

The study was designed to test the following:

Hypothesis One. Different health workers who deliver group weight management programmes do not produce significantly different changes in weight, BMI, waist circumference, blood pressure.

Rational - Separate studies assessing different workers point to similar reductions in weight, BMI, waist circumference and blood pressure, irrespective of professional status (Jebb et al., 2010; Nanchahal et al., 2009; Tsai et al., 2009; Counterweight Project Team, 2008b; Pallister et al., 2008; Rock et al., 2007; Read et al., 2004).

Hypothesis Two. Attendance rates of group weight management programmes do not differ according to the health worker who delivers them.

Rational - Existing literature suggests that group weight management programmes have a similar attendance rate, irrespective of the deliverers' profession (Counter Weight Project Team, 2008b; Pallister et al., 2008; Jackson et al., 2007; Read et al., 2004; Willaing et al., 2004; OXCHECK Study Group, 1995).

Hypothesis Three. Different health workers who deliver group weight management programmes see similar patients according to age, gender, ethnicity, indices of multiple deprivation and clinical characteristics.

Rational - Studies which have examined the demographics of those who attend group weight management programmes report similar characteristics, regardless of who has delivered the programme (Counter Weight Project Team, 2008b; Pallister et

al., 2008; Jackson et al., 2007; Read et al., 2004; Willaing et al., 2004; OXCHECK Study Group, 1995).

To understand what interventions work best for different groups in the population, it has been recommended that results are stratified according to age, gender, ethnicity and socio-economic status (Freedman, King & Kennedy, 2001). Accordingly, this was attempted. Weight change, BMI and waist circumference were considered the best indicators of clinical effectiveness and have been recommended to enable easier comparison with existing evidence (Harvey et al., 2009). To assess the impact on health outcomes, weight change was also expressed as the percentage of patients who achieved a clinically significant weight loss of 5% or more (Royal College of Physicians, 1998). Systolic and diastolic blood pressure was chosen as an additional health outcome to gauge whether changes followed well established trends (Royal College of Physicians, 1998). See Table 2-1. for a summary of the evaluation's dimensions.

Measured Outcomes	Demographic Comparisons
<ul style="list-style-type: none">• Weight• BMI• % patients achieving Clinically significant weight loss• Waist Circumference• Systolic blood pressure• Diastolic blood pressure• Attendance	<ul style="list-style-type: none">• Gender• Age• Ethnicity• IMD

Table 2-1: Dimensions of the evaluation

Much of the week six data was missing and the amount of information available beyond 12 weeks was very limited. Therefore, the evaluation made comparisons between week one and week twelve only.

2.3 Ethical Considerations

In the interests of patient safety, rights and confidentiality guidance on NHS ethical approval was sought from County Durham and Tees Valley 2 Research Ethics Committee and was considered unnecessary by the expert panel (see appendix 3a). The project was also deemed to be a service evaluation by the Research Management and Governance Unit for County Durham and Tees Valley Primary Care Trusts and therefore did not require research governance approval (see appendix 3b). Ethical approval was granted from the Research Ethics Committee for the Faculty of Health and Applied Sciences at the University of Chester (see appendix 3c).

On gaining suitable ethical approval from the university, Information Governance at NHS County Durham and Darlington was approached for the release of aspects of a database required for the study. Access to all requested fields was permitted, with the exception of post code data. This was considered too specific by the Information Governance team due to the highly rural nature of parts of the county and therefore possible identification of individuals. Case entries were identifiable by an allocated number only to ensure anonymity. The final agreed data pool was transferred via a secure e-mail in an excel document to the lead researcher and stored on a password protected computer.

For the compilation of the database itself, health workers responsible for recruiting patients were instructed to request a signed consent from each participant permitting the collection and storage of anonymous information (see appendix 4).

2.4 Data Management

The Sample

A total of 991 case entries were received. Of these, sixteen had no data entered against them at either week one or twelve and so were removed. One entry did not meet BMI inclusion criteria and was also excluded. The final case number for analysis was 974. Of these, 367 cases had data entered against week twelve, and were defined as the completers group. The remaining 607 cases had no data entered at week 12 and were assumed to have not attended the final session. They were defined as non-completers.

Changes to Data

Waist circumference and height measurements suspected to be entered in imperial units rather than the metric equivalent were cross checked with the corresponding BMI and weight entries before being either converted (using standard conversion tables) or replaced with the error code if the measures failed to complement each other. Entries for waist circumference were rounded to the nearest centimetre to reflect a more realistic level of accuracy (NOO, 2009a).

Additional Data Fields

IMD - Due to the absence of individual case post codes, the IMD score for the participants registered GP surgery was assigned to each case entry, using published IMD scores for GP practices (Association of Public Health Observatories, 2011).

Clinically Significant Weight loss - In order to interpret weight changes in terms of clinical significance, a five percent weight loss target for each completer case was calculated from baseline weights and a nominal data field was added indicating whether this was achieved or not.

Missing and Erroneous Entries

All variables for each of the 974 cases were checked for plausibility. Acceptable ranges were formulated for age, weight, height, BMI, waist circumference and blood pressure entries which were considered broad enough to avoid unnecessary deletion of unusual entries, but sufficient to allow the detection of obvious erroneous entries. These are outlined in Table 2-2. Any values that fell outside these set parameters and any other errors detected from the remaining fields were replaced with an error code, 888. Missing values for all variables were represented with 666. Table 2-3. summarises the counts and percentages of erroneous or missing data, and final sample sizes used for analyses.

Data Field	Applied Range
Age	18 to 86 years
Weight	50 to 250kg
Height	1.2 to 2.13 metres
BMI	≥ 25 to $\leq 70 \text{Kg/m}^2$
Systolic Blood Pressure	50 to 250mmHg
Diastolic Blood Pressure	35 to 140mmHg

Table 2-2: Accepted parameter ranges for data entries

	Total Sample N=974				Completers Only N= 367				None Completers N= 607			
	Erroneous/Missing data		Final Analysis Sample Size		Erroneous/Missing data		Final Analysis Sample Size		Erroneous/Missing data		Final Analysis Sample Size	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Gender	0	0	974	100	0	0	367	100	0	0	607	100
Ethnicity	0	0	974	100	0	0	367	100	0	0	607	100
Age	361	37.1	613	62.9	157	42.8	210	57.2	204	33.6	403	66.4
IMD Score	1	0.1	973	99.9	0	0	367	100	1	0.2	606	99.8
Baseline Weight	1	0.1	973	99.9	1	0.3	366	99.7	0	0	607	100
Week 12 Weight	608	62.4	366	37.6	1	0.3	366	99.7				
Participants achieving clinically significant weight loss (≥5%)	608	62.4	366	37.6	1	0.3	366	99.7				
Baseline BMI	9	0.9	965	99.1	2	0.5	365	99.5	7	1.2	600	98.8
Week 12 BMI	609	62.5	365	37.5	2	0.5	365	99.5				
Baseline Waist Circumference	129	13.2	845	86.8	35	9.5	332	90.5	94	15.5	513	84.5
Week 12 Waist Circumference	716	73.5	258	26.5	110	30.0	257	70.0				
Baseline Systolic Blood Pressure	564	57.9	410	42.1	206	56.1	161	43.9	358	59.0	249	41.0
Week 12 Systolic Blood Pressure	869	89.2	105	10.8	262	71.4	105	28.6				
Baseline Diastolic Blood Pressure	565	58.0	409	42.0	207	56.4	160	43.6	358	59.0	249	41.0
Week 12 Diastolic Blood Pressure	872	89.5	102	10.5	265	72.2	102	27.8				
Number of sessions attended out of 12	580	59.5	394	40.5	61	16.6	306	83.4				

Table 2-3: Counts and percentages for excluded data entries for the test variable

2.5 Health Worker Classification

There were 57 accredited staff members who entered data into the database. The professional status of each was checked against original mandatory training attendance sheets. All personnel were then classified into three subdivisions according to their core function within the PCT:

- Administrative role, (AA)
- Health Care Assistants (HCA)
- Nursing care (N)

This classification was based on the likely level of formal health qualifications and clinical ability within their role. Grouping professions in this way allowed meaningful statistical analysis of all entries by the retention of small numbers of case entries by single deliverers.

Table 2-4 summarises the jobs and number of staff within these three divisions.

Administrative Assistants (n=6)	Health Care Assistants (n=19)	Nursing (n=32)
1 Administration Assistant 4 Receptionists 1 Web Developer	15 Nurse Health Care Assistants 2 Dietetic Assistants 1 Public Health Nutritionists 1 Private Health Care Provider	30 Practice Nurses 2 Nurse Practitioners

Table 2-4: Constitution of health worker groupings

Figure 2-1 gives a schematic representation of data origin and selection.

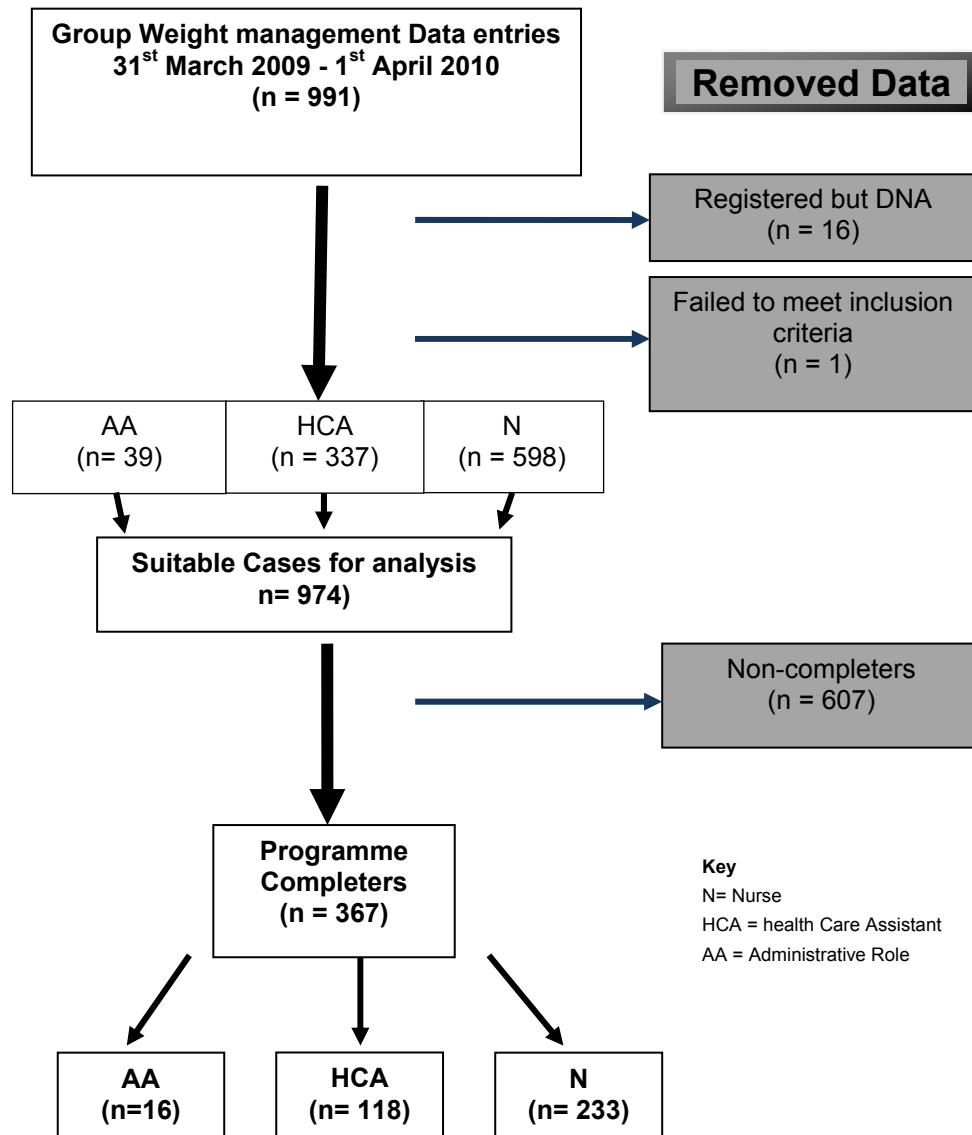


Figure 2-1: Data Origin and Selection

2.6 Statistical Analyses

All analyses were carried out using the data analysis package SPSS version 17 (SPSS Inc., Chicago, Illinois). Data distributions were examined for normality using Kolmogorov-Smirnov significance value for sample sizes greater than 100 or Shapiro-Wilk if they were less (Coakes & Steed, 2007). Normal data are presented as mean \pm standard deviations (SD) and comparisons were analysed with an

independent t- test. The median and interquartile range (IQR) were used to report skewed data and comparisons were analysed with the non-parametric Mann Whitney 'U' test. Kruskal Wallis Anova was used to analyse differences between the three groups of workers. To assess whether programme completers had a significant change in ordinal variables between baseline and the end of the programme, the paired t-test was selected or, in the absence of normal distribution, the non-parametric equivalent, the Wilcoxon Signed Ranks test.

Frequency and percentage were reported for all nominal data (gender, ethnicity, IMD, attendance and percentage achieving 5% weight loss) and differences found were checked for significance using Chi-Squared. The percentage of cases achieving a clinically significant weight loss was calculated using descriptive statistics.

Attendance was calculated as a percentage for the total participants and participation by each health worker group using the formula:

$$\text{Percentage Attendance} = \frac{\text{Number of completers}}{\text{Total Number of Participants}} \times 100.$$

A statistical significance was accepted at $p < 0.05$ (Franks & Huck, 1986) unless multiple post hoc tests were performed, in which case a Bonferroni adjustment was applied to avoid a type I error (Williams & Wragg, 2004).

3. RESULTS

3.1 Hypothesis One. Different health workers who deliver group weight management programmes do not produce significantly different changes in weight, BMI, waist circumference, blood pressure.

Table 3-1 summarises the measured variables weight, BMI, percentage patients achieving clinically significant weight loss, waist circumference and blood pressure for those who completed the programme and according to the three group of workers.

3.1.1 Weight and BMI Changes

The overall median weight loss from those who completed the programme was 3.6kg (IQR=5.0), a significant reduction ($p < 0.001$) which equates to a 3.5% decrease in the median baseline body weight from 95.9kg (IQR=24.7) to 91.6 (IQR=22.9). Of those who completed the programme, 122 (33%) achieved a 5% reduction of their baseline body weight. BMI changes shadowed the weight decreases, and were also significantly reduced ($p < 0.001$) from the baseline measurement by 1.4kg/m² (IQR=1.8).

Differences in the median weight losses for AA, HCA and nurses (-3.6kg, -4.0kg and 3.0kg respectively) were found to be significant ($p=0.027$) and a post hoc analysis revealed the significant difference to be between HCA and nurses ($p=0.008$). There was also a significant difference between BMI reductions achieved by the workers (AA -1.3kg/m²; HCA -1.5kg/m²; nurses -1.2kg/m²; $p=0.021$) and the post hoc analysis found the difference was again between HCA and nurses ($p=0.007$). IQR values for the two sets of health workers for weight and BMI show that the spread of the

data is similar for both. AA also helped completing participants lose and additional 0.6kg of weight compared to nurses, but this difference, nor the corresponding additional BMI reduction of 0.1kg/m² was found to be significantly different to either the nurses or HCA. A similar percentage of patients seen by each worker group achieved a clinically significant weight loss of 5% (AA 25%; HCA 37%; nurses 32%) and no significant difference was detected between any of them for this measure (p=0.451).

3.1.2 Waist Circumference Changes

Waist circumference decreased by a median of 6cm [IQR=6] (p <0.001). Post hoc analysis found the reduction in waist circumference of 7cm for patients seen by HCA was significantly more than the 5cm reduction for patients seen by nurses (p <0.001). Insufficient data for AA compromised the analysis and no further significant differences between any other workers were detected.

3.1.3 Blood Pressure Changes

Overall, the median systolic blood pressure of programme completers fell by 8mmHg (IQR=16), statistically significant (p <0.001) and diastolic pressure reduced by 2mmHg (IQR=8) also significant (p=0.001). AA had no data for completing patients for either systolic or diastolic measures. Analysis of the differences between HCA and nurses blood pressure changes revealed no statistical significance (p=0.745 systolic; p=0.1 diastolic).

Figures 3-1 to 3-6 show graphical representations of the changes from baseline measurements for weight, BMI, waist circumference, systolic and diastolic blood pressure for each group of workers.

	Week 1	Week 12	Median (IQR) change after 12 weeks	p-value for differences between week 1 and 12	AA	HCA	Nurses	p-value for difference between health workers
Weight (kg)	95.9(24.7) (n=366)	91.6(22.9) (n=366)	-3.6(5.0)	**<0.001	-3.6(3.3) (n=16)	- 4.0(4.2) (n=118)	-3.0(4.5) (n=232)	**0.027
Participants Who Achieved Clinically Significant Weight loss (≥5%)	-	122 (33) (n=366)	-	-	4(25) (n=16)	44(37) (n=118)	74(32) (n=232)	0.451
BMI (kg/m²)	35.9(8.0) (n=365)	34.6(7.7) (n=365)	-1.4(1.8)	**<0.001	-1.3(1.3) (n=16)	-1.5(1.6) (n=117)	-1.2(1.6) (n=232)	**0.021
Waist Circumference (cm)	110(18) (n=332)	105(15) (n=257)	-6(6)	**<0.001	- (n=3)	-7(7) (n=91)	-5(7) (n=163)	**<0.001
Systolic blood Pressure (mmHg)	135(22) (n=161)	126(23) (n=105)	-8(16)	**<0.001	- (n=0)	-6 (25) (n=47)	-8(17) (n=58)	^a 0.745
Diastolic blood pressure (mmHg)	80(9.8) (n=160)	80(10) (n=102)	-2(8)	**0.001	- (n=0)	*-5(11) (n=45)	-2(8) (n=57)	^b 0.1

Table 3-1: Changes in complete variables at week 12 and according to health worker group

Data are reported as frequency and percentage of participants achieving clinically significant weight loss. Median and IQR are for all ordinal data unless otherwise stated * denotes mean and SD values ** denotes a significant difference of <0.05

^aMann Whitney 'U' Test ^bIndependent T test

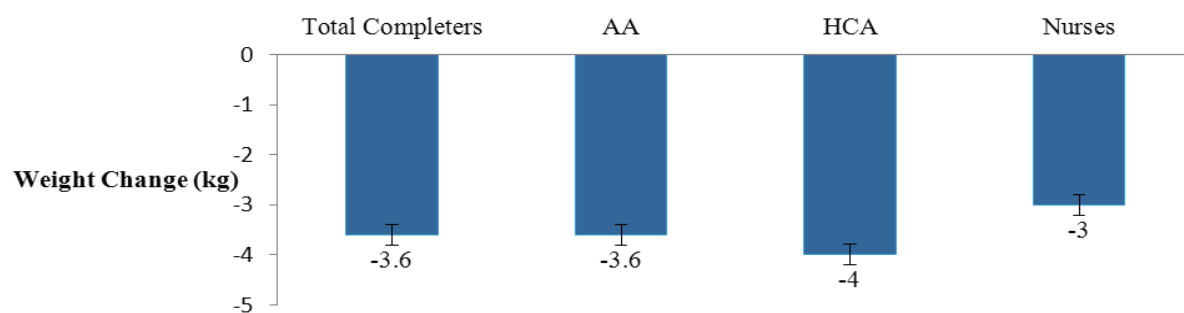


Figure 3-1: Comparison of weight changes from baseline between health worker groups

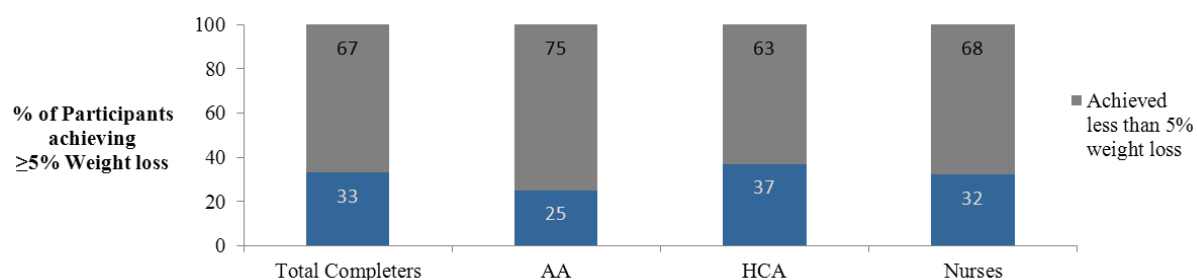


Figure 3-2: Comparison of completers who achieved $\geq 5\%$ weight loss between health worker groups

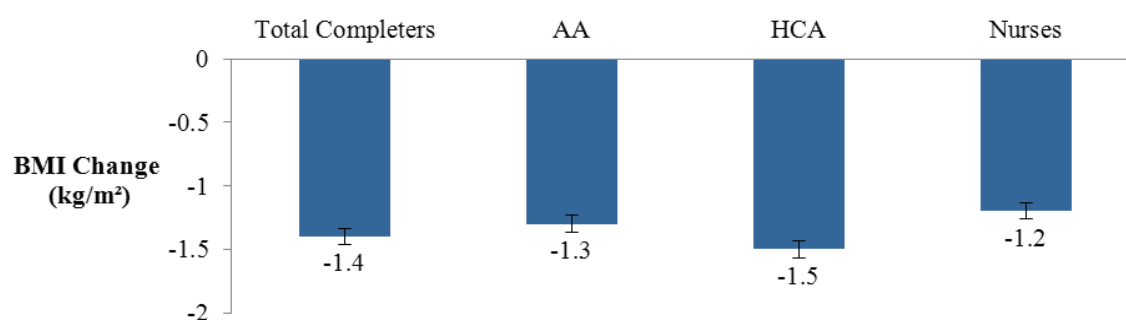


Figure 3-3: Comparison of BMI changes from baseline between health worker groups

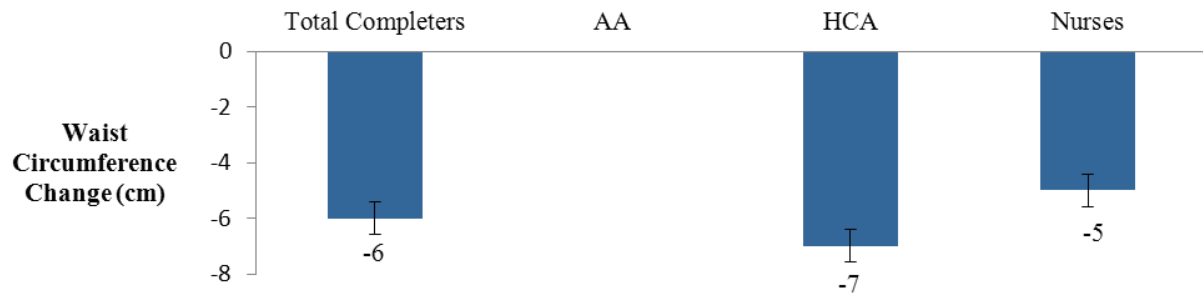


Figure 3-4: Comparison of waist circumference changes from baseline between health worker groups

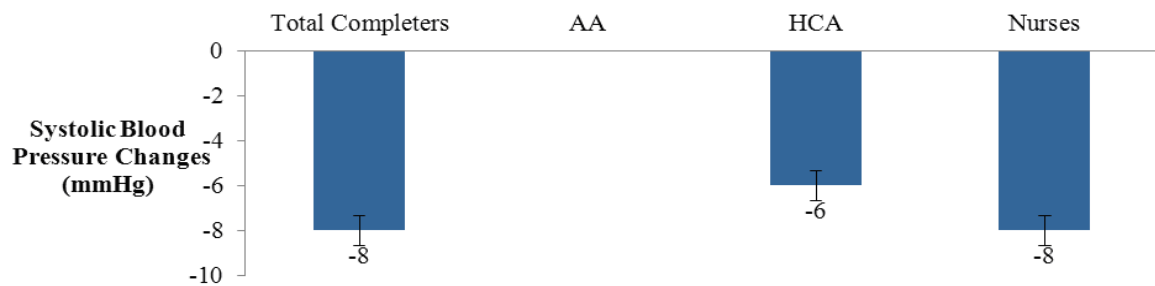


Figure 3-5: Comparison of systolic blood pressure changes from baseline between health worker groups

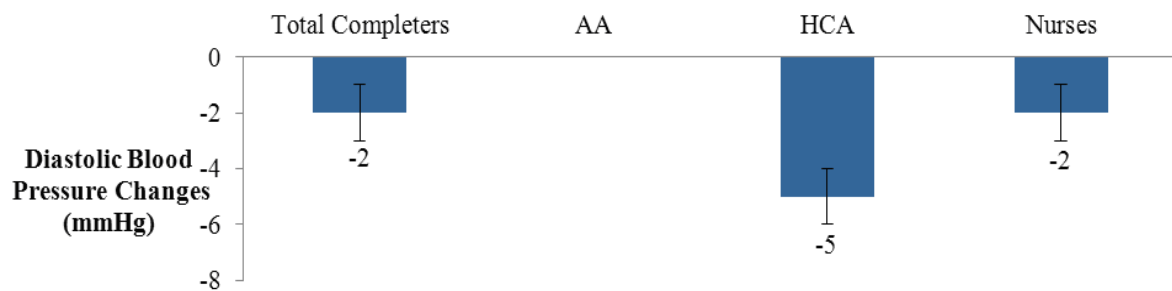


Figure 3-6: Comparison of diastolic blood pressure changes from baseline between health worker groups

3.2 Hypothesis Two. Attendance rates of group weight management programmes do not differ according to the health worker who delivers them.

For all participants, 38% attended until week 12 of the programme. Attrition was 62%. Overall, 41% of male enrollers and 37% of female enrollers completed the programme. Only two people from ethnic backgrounds other than white British completed the programme, which represents 25% of those who originally enrolled from this population group.

Of the 974 participant data entries, 4%, 35% and 61% enrolled with AA, HCA and nurses respectively and of these 41%, 35% and 39% respectively completed the 12 week programme. These differences between the workers attendance rates were not found to be significant ($p=0.444$). See Figure 3-7 for a graphical representation. The median attendance rate out of 12 sessions was five for both AA and nurses, and six for HCA, a difference that was not found to be significant ($p=0.281$).

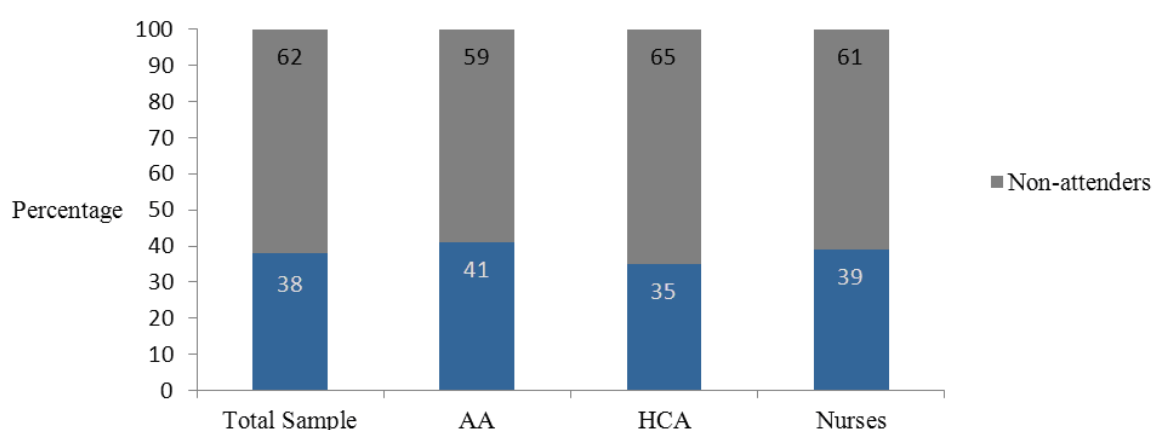


Figure 3-7: Percentage of participants who completed the 12 week programme

3.3 Hypothesis Three. Different health workers who deliver group weight management programmes see similar patients according to age, gender, ethnicity, indices of multiple deprivation and their clinical characteristics.

3.3.1 Characteristics of all Participants

Table 3-2. summarises the baseline characteristics of participants of the 12 week weight management programmes in County Durham and Darlington.

The total sample consisted of 83.3% (n=811) women, with a median age of 57(IQR=23) years. The overwhelming majority of participants (99.2%) were white British - only eight were from ethnic groups other than white British. Participants were from GP practices with a median IMD score of 28.3(IQR=14.3), had a median weight of 96.4kg (IQR=24.6), BMI 36.1kg/m² (IQR=7.9) and waist circumference of 111cm (IQR=18). Median systolic blood pressure was 135mmHg (IQR=21) and diastolic was 80mmHg (IQR=12).

3.3.2 Differences in Characteristics between Completers and Non-completers

Those who completed the 12 week programmes had a median age of 61 years (IQR=19), significantly older ($p < 0.001$) than those who failed to complete the programme who had a median age of 56 years. Completers were also from practices with significantly lower IMD scores ($p < 0.001$) than non-completers (27.3 [IQR=14.1] compared to 31.5[IQR=10.5] respectively). In every other respect, those who completed the programme did not differ significantly in baseline characteristics from the non-completers.

3.3.3 Differences in Characteristics According to Health Worker Groups

The characteristics of patients seen by the three different groups of health workers were similar in all respects except for GP practice IMD score, waist circumference, systolic and diastolic blood pressure. IMD scores were 34.2(IQR=5.5), 33.4(IQR=11.7) and 27.1 (IQR=12.6) for AA, HCA and nurses respectively. Post hoc analysis of these differences found that patients from practices with higher IMD scores were significantly more likely to be seen by a HCA ($p=0.001$) or an AA ($p<0.001$) than by a nurse, although the variation of the data is large. AAs saw patients with significantly lower waist circumference values (104cm compared to 111cm for both HCA and nurses, $p=0.001$). Differences in systolic blood pressure between the workers were significantly different (AA, 144mmHg, HCA 135mmHg and nurses 132mmHg, $p=0.023$). Post hoc analysis found that participants who were seen by nurses had significantly lower systolic blood pressure than AA ($p=0.006$) but the difference between AA and HCA was not significant. Although significant differences in diastolic blood pressure were detected ($p=0.022$), when a Bonferroni adjusted p value of 0.017 was applied to the post hoc analysis, no differences in diastolic pressures were identified between any of the workers. Figures 3-8 to 3-11 display the baseline differences in characteristics graphically.

All relevant SPSS analysis outputs can be found in appendix 5.

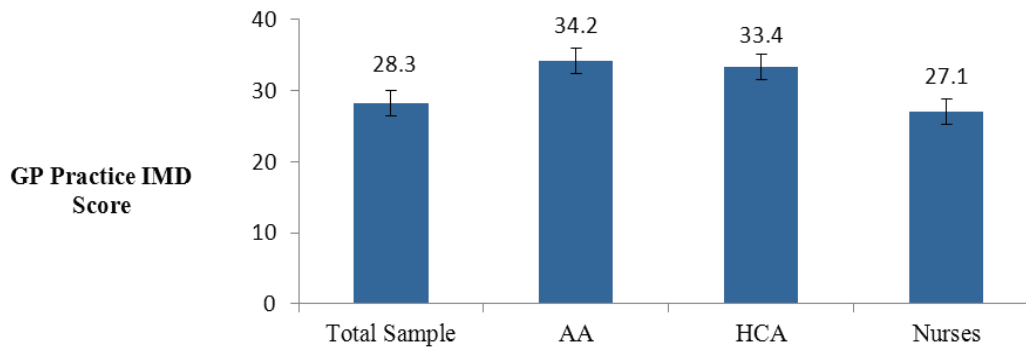


Figure 3-8: Differences in baseline IMD scores between health worker groups

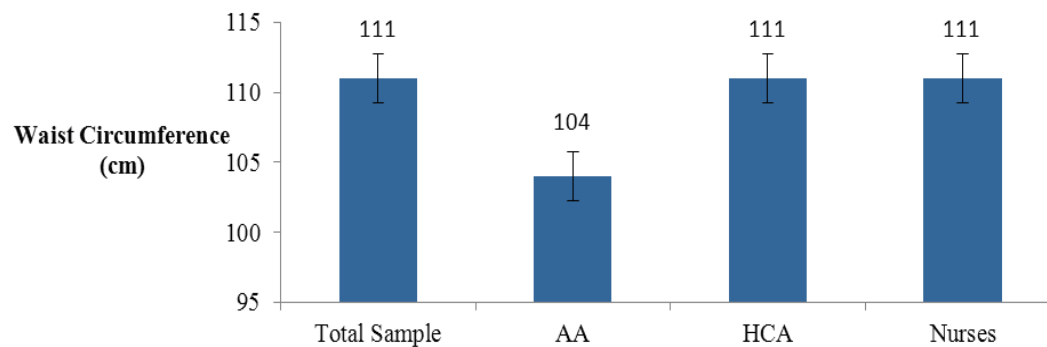


Figure 3-9: Differences in baseline waist circumference between health worker groups

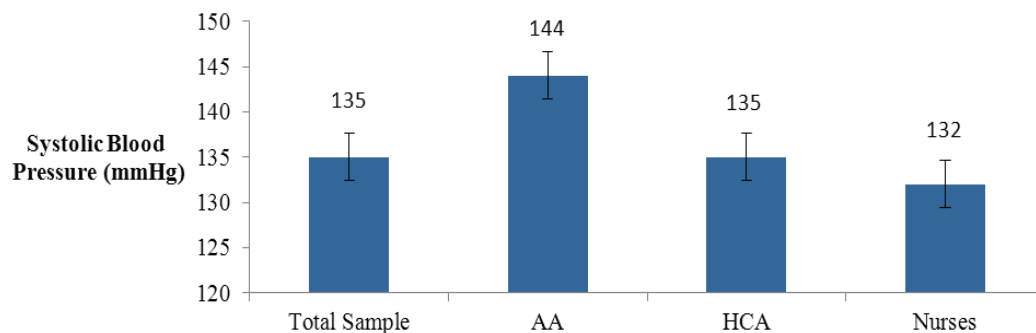


Figure 3-10: Differences in baseline systolic blood pressure between health worker groups

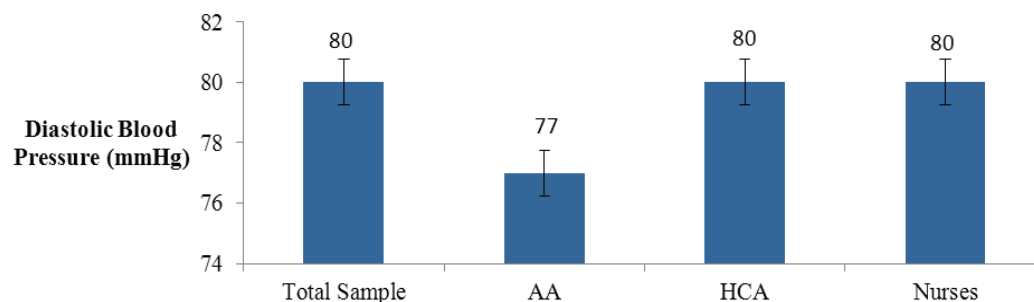


Figure 3-11: Differences in baseline diastolic blood pressure between health worker groups

	Total Sample	Completers only	Non-Completers	p-value for differences between completers and non-completers	AA N= 39	HCA N= 337	Nurses N= 598	p-value for differences between health workers
Male	163(16.7)	67(18.3%)	96(15.8)	0.368	6 (15.4)	53(15.7)	104(17.4)	0.786
Female	811(83.3) (n= 974)	300(81.7) (n= 367)	511(84.2) (n= 607)		33(84.6) (n= 39)	284(84.3) (n= 337)	494(82.6) (n=598)	
White British	966(99.2)	365(99.5)	601(99.0)	-	39(100)	336(99.7)	591(98.9)	0.789
Other	8(0.8) (n=974)	2(0.6) (n= 367)	6(1.0) (n= 607)		0 (n= 39)	1(0.3) (n=337)	7(1.1) (n=598)	
Age (years)	57(23) (n= 613)	61(19) (n= 210)	56(23) (n= 403)	** <0.001	*48(15) (n=5)	55(24) (n=201)	58(22) (n=407)	0.35
IMD score	28.3(14.3) (n=973)	27.3(14.1) (n=367)	31.5(10.5) (n=606)	** <0.001	34.2(5.5) (n=38)	33.4(11.7) (n=337)	27.1(12.6) (n=598)	**<0.001
Weight (Kg)	96.4(24.6) (n=973)	95.9(24.7) (n= 366)	96.6(25.7) (n= 607)	0.32	89.7(20.6) (n=39)	95.6(23.3) (n=337)	96.9(25.9) (n=597)	0.57
BMI (Kg/m ²)	36.1(7.9) (n= 965)	35.9(8.0) (n= 365)	36.2(7.9) (n= 600)	0.45	35.4(4.9) (n= 39)	36.2(7.9) (n= 330)	36.2(8.0) (n= 596)	0.61
Waist Circumference (cm)	111(18) (n= 845)	110(18) (n= 332)	111(19) (n= 513)	0.71	*104(9.9) (n=30)	111(19) (n=294)	111(18) (n=521)	**0.003
Systolic Blood Pressure mmHg	135(21) (n= 410)	135(22) (n= 161)	135(20) (n=249)	0.93	*144 (20) (n=22)	135(23) (n=152)	132(18) (n=236)	**0.023
Diastolic Blood Pressure mmHg	80(12) (n= 409)	80(9.8) (n= 160)	80(13.5) (n= 249)	0.72	*77(6.5) (n=31)	80(14.5) (n=153)	80(11) (n=234)	**0.022

Table 3-2: Baseline characteristics of group weight management participants

Data are reported as frequency and percentages for nominal data and median and IQR for ordinal data unless otherwise stated * denotes mean and SD values ** denotes a significant difference (p<0.05)

4. DISCUSSION

4.1 Overall Effectiveness of Programme

The findings of this evaluation suggest that the group weight management programmes in County Durham and Darlington can be an effective weight loss tool for patients who complete them. Those who finished the twelve week interventions experienced a significant weight reduction of 3.6kg ($p < 0.001$) and also achieved a significant 6cm decrease in accompanying waist circumference ($p < 0.001$) and 1.4kg/m² drop BMI ($p < 0.001$). These encouraging results also carry some potential clinical benefits. One third of completers achieved a clinically significant weight loss of 5% or more of their original body weight. The reduction in waist circumference is as important as weight the loss itself so far as health benefits are concerned; decreases are strongly correlated with risk reduction even in the absence of any weight change (NOO, 2009a). Although the investigation was not designed to assess the impact of weight loss on blood pressure, significant reductions in both diastolic ($p < 0.001$) and systolic ($p < 0.001$) confirm already established trends.

When the intervention is compared with other primary care weight management studies of a similar duration, weight loss results are strikingly similar in magnitude. In the Counterweight Programme (2008b), participants lost about 3kg, the same amount reported by Nanchahal et al. (2009) in their randomised controlled trial. The authors of the trial also report that 34% of participants achieved 5% or more weight loss and a waist circumference reduction of about 3cm. These similarities are welcome reassurance that what happens in a real clinical setting can be as effective as randomised controlled interventions.

Unfortunately, data beyond the three months was limited for this intervention and did not allow assessment of longer term weight loss achievements. Most agree that surveillance of programmes needs to be at least one year, preferably three, for a clearer understanding of health impact in the longer term (Wing & Phelan, 2005; Avenell et al., 2004).

Maintaining weight loss is notoriously difficult to achieve and has prompted some to encourage primary care to reconsider weight loss as a target, and contemplate the promotion of weight maintenance and prevention of further weight gain instead (Pryke & Docherty, 2008). This argument is supported by the minority of people who seem to be able to achieve five to ten percent weight loss (Avenell et al., 2004) and reflected in the results of this evaluation. Of all those who registered for the County Durham and Darlington weight management programmes, only thirteen percent achieved a clinically significant weight loss.

These less heartening outcomes can be partly explained by the poor attendance. High dropout rates are not an unusual phenomenon for weight management programmes but, regrettably, this initiative's attendance of 38% is especially low when compared to others. More typically it is reported to be around 50% after three months of intervention (Counterweight Project Team, 2008b; Read et al., 2004).

4.2 Hypothesis One. Different health workers who deliver group weight management programmes do not produce significantly different changes in weight, BMI, waist circumference, blood pressure.

4.2.1 Weight and BMI Changes

For this intervention, the 19 health care workers in supporting clinical roles were able to help patients lose weight ($p= 0.008$), reduce their waist circumference ($p= 0.007$) and decrease their BMI ($p= <0.001$) significantly more than the thirty two nurses who contributed. Staff in clerical roles were not found to be significantly better, but were equally capable as nurses of achieving weight and BMI reductions.

Why less qualified staff performed so favourably is intriguing. Part of the answer could lie in the changing role and circumstances that face the modern practice nurse. Insufficient time has been recognised as one of the main barriers to effective weight management treatment (Maryon-Davis, 2005) and undoubtedly primary care nurses are under growing pressure from this. Caseloads are increasing. In 1995, 21% of all primary care consultations were performed by nurses compared to 34% in 2009 (The NHS Information Centre for Health and Social Care, 2009b). Moreover, the role of the practice nurse is also diversifying and migrating into more advanced duties, requiring them to work at the top of their skill set (Buchan, 2008). Weight loss programmes are likely to be only a small part of their job. At the same time, effective techniques for helping patients with weight management are known to be more time consuming than standard care (Allan, Hoddinott & Avenell, 2010). This paradox between insufficient time and effective treatment is likely to be a frustration as well as a limitation for the keenest of professionals.

Research has shown that a gap in nutrition knowledge inhibits the achievements of health care workers (Hankey, Eley, Leslie, Hunter & Lean, 2003). Evidence that workers are able to attain significantly better weight loss results for patients following knowledge based training (Counterweight Project Team, 2008b; Flodgren et al., 2010) supports its continued promotion and justifies the content of the training package for this initiative (appendix 2). While sound nutritional facts are clearly very important, other practical skills including behaviour change therapy and group facilitation techniques have also been shown to be influential on weight loss outcomes (Allan, Hoddinott & Avenell, 2010). Unfortunately, the training in County Durham and Darlington did not include an opportunity to develop these hands-on abilities. Without an insight into what the training needs of the workforce were beforehand, it is impossible to say whether the knowledge based training tackled the needs of the health care assistants better than the needs of nurses, or whether the missing practical aspects of behaviour therapy and group facilitation would have benefitted the nurses more. This deficiency underscores the advantage of time spent understanding the specific learning needs of the workforce for whom training is intended. This valuable information would have allowed tuition to be tailored to the expressed requirements of the recipients. Without it, the 'blanket' training events that staff experienced are unlikely to have achieved the desired goals for everyone.

Health workers have been shown to have low expectations of their own efficacy, and expressed frustration with the lack of motivation and compliance they perceived patients to have (Puhl & Heuter, 2009). These attitudes could unintentionally translate into a reduced motivation to treat, with a consequence on outcomes. Equally, managing overweight and obese patients with empathy and a non-judgemental attitude might

improve weight loss prospects. The characteristics of personnel in this evaluation may well hold some of the answers to the effectiveness between workers. However, without a thorough examination, the personal qualities of health workers that unleash the weight loss potential in people will remain unclear.

4.2.2 Waist Circumference Changes

The significant difference ($p < 0.001$) in waist circumference reduction between HCA and nurses follows a similar pattern to those seen for weight and BMI changes. What is much more salient is the amount of missing or erroneous data for this variable (see Table 2-3). For all participants who completed the programme, nearly a third of the values were omitted, leaving a sample of 257 entries. Only three of these were contributed by AA, making any analysis for this worker group difficult. By contrast, nurses contributed nearly two thirds of the available data, double that made by HCA.

4.2.3 Blood Pressure Changes

Blood pressure data entries were also inadequate. Differences in systolic and diastolic blood pressure for the three worker types were not found to be significantly different ($p = 0.745$ systolic; $p = 0.1$ diastolic). But the analysis relied on just over 100 entries out of a possible 367, and the range of the data for HCA was large (systolic IQR=25, diastolic IQR=11) suggesting a wide variability in the readings. The lack of blood pressure entries by those with fewer health qualifications was noticeable. There were no data at all for the completing patients of administrative assistants, making any comparison with nurses or health care assistants impossible. Noticeably more entries were made by nurses than HCA.

One reason for the high levels of missing data might be the design of the database itself. Data range restrictions, and data validation tools that may have ruled out some errors and authenticate entries were not within its design. Also, the financial incentive to encouraged participating staff to record details might have been counterproductive - the inclusion of a monetary reward automatically introduces an ulterior motive to make entries, whatever the quality. Unfortunately, there has been limited evaluation of the impact of such schemes that pay to promote good practice, and in the absence of a validation tool, reliability is regrettably questionable.

Short falls in data entry not only make results less certain, but also raise the important question of why the database contributions were so obviously different between the types of workers. One indication for the disparities might be in the level of skill associated with taking waist circumference and blood pressure measurements. Measures of central adiposity have a high amount of error associated with them and confidence and competence of the worker in it is already known to be important (NOO, 2009a). Blood pressure presents similar challenges. A recent report on clinical guidelines for hypertension by the National Institute for Health and Clinical Excellence (2011) emphasised the importance of 'adequate initial training' and 'periodic review' of the techniques used to monitor blood pressure. It is likely that these important capabilities exist more in health workers with a greater clinical training. Accurate measurement by this group of workers is a lot more probable.

The achievement of equal and superior weight loss by workers with less health qualifications carries potential implications. A cost analysis is beyond the scope of this

evaluation, but common sense suggests that HCA present a less expensive means of delivering weight management initiatives than those who are more highly skilled. The temptation to use this staff group as a convenient economic substitute is easy to appreciate, especially in times of austerity. However, the replacement of those with advanced clinical abilities is not without substantial risks or problems. Obesity is a complex disease. Patients requiring support are likely to present with several related co-morbidities that will require adequate and safe clinical management from the whole of the primary care team. This complexity of needs may explain the biased enrolment of patients towards nurses in this study, nearly two thirds of all the registrants, a figure which demonstrates a clear preference.

While there can be no doubt that assistants and support staff have an important and valuable place in weight management intervention, their capabilities of identifying and managing potentially serious health issues is less than certain; the high level of missing and erroneous data for clinical measurements that accompanies them in this investigation is testimony to the argument.

The scale of the obesity problem dictates that the responsibility for reducing it is shared and a spectrum of health workers with a diverse skill mix is most likely to offer the best comprehensive solution. Unfortunately, wider matters indicate that the future demands on clinically skilled professionals are unlikely to ease and we can expect them to be an increasingly precious resource (Buchan, 2008). These broader workforce implications will demand fresh and flexible thinking about how primary care staff can meet the increasing health care requirements of their obese and overweight patients.

One suggestion might be to assess and triage patients into groups according to complexity of health need, and the development of a corresponding graded intervention. Such a tiered system could be designed to utilise the excellent weight loss skills of support health workers and at the same time protect clinical nursing abilities for the patients who most need them. A dedicated individual with advanced skills and knowledge to support all staff has clear advantages and could be a realistic and sustainable option for the continuous dissemination of accurate and evidence based practice. Invariably, the proposal would depend upon strong inter-professional partnerships, good communication and a degree of primary care collaboration for it to be feasible.

4.3 Hypothesis Two. Attendance rates of group weight management programmes do not differ according to the health worker who delivers them.

Low attendance, irrespective of the deliverer's role, is usual. The literature shows that dietitians, health visitors, nurses, lay deliverers and doctors have all been victims of high attrition (Counter Weight Project Team, 2008b; Pallister et al., 2008; Jackson et al., 2007; Read et al., 2004; Willaing et al., 2004; OXCHECK Study Group, 1995). This evidence and the absence of any difference detected between workers in this evaluation study, suggests the reasons for dropout, whatever they are, are not exclusive to a certain profession.

Little is published on the reasons for attrition from weight management groups, but the factors responsible are likely to be numerous and complex. The physical and social environment of delivery, programme design, recruitment process and inclusion criteria are all possible, modifiable contributors. The prize of better attendance warrants further

detailed exploration. Investigation into what motivated patients to complete programmes and a satisfaction enquiry directed at patients who dropped out would provide a much needed insight into the reasons for attrition and inform necessary adaptations.

Other contributors are less easily addressed. Individual perceptions and beliefs and competing life events could influence peoples' motivation to change their behaviour and are probably very important determinants of whether they choose to be there or not. The idea of screening patients for readiness to change prior to recruitment has the potential of saving lot of time and resources in the longer term, currently wasted on people who are not in the right position to succeed. However, the promotion of preliminary assessments of this scale to staff who already face immediate time and capacity constraints will need careful consideration.

4.4 Hypothesis Three. Different health workers who deliver group weight management programmes see similar patients according to age, gender, ethnicity, indices of multiple deprivation and their clinical characteristics.

Predominantly, attenders of the weight management programmes in County Durham and Darlington were white women who were significantly older ($p < 0.001$) and from practices with lower IMD scores ($p < 0.001$).

4.4.1 Age

Patients who enrolled in local weight management initiatives had a median age of 57, about seven years older than those reported in similar primary care studies (Counterweight Project Team, 2008b, Read et al., 2004), and is possibly a reflection of

local demographics. Participants who completed programmes were on average five years older than those who did not, a considerable difference ($p < 0.001$). Despite over 40% of missing data hampering this assessment, the same disparity has been observed by others (Counterweight Project Team 2008b; Jackson et al., 2007; Roberts & Ashley, 1999) and implies that there is an age related preference for group work intervention. Why this should be the case is intriguing. It might be that more mature people recognise their own vulnerability to ill health and consequently are more motivated to change. Some research indicates patients with a higher risk of comorbidities are more driven to making positive changes (Gordon, Graves, Hawkes & Eakin, 2007). How closely linked co-morbidity risk is to age in this study could prove to be a telling exploration.

4.4.2 Gender

Only 17% of those who enrolled in the weight management programmes were men. This low participation by this gender is consistently reported by other studies too. In the Counterweight Programme (Counterweight Project Team, 2008b), only 23% were men and a commercial slimming organisation reported just 3% of their participants were (Bye, Avery & Lavin, 2005).

Of those who enrolled, slightly more men than women completed the programmes (41% of men compared to 37% of women). This greater chance of completion by men has also been observed elsewhere (White & Pettifer, 2007) and suggests that if male attention can be captured in the first place, they are likely to engage for longer than their female counterparts.

4.4.3 Ethnicity

Although the ethnic population of County Durham and Darlington is unusually low [1.2%] (Robinson, 2007) and this irregularity might be expected to be reflected in attendance of local programmes, uptake by ethnic minority groups is still patently poor. The total number of ethnic minority participants represented just 0.8% of all those enrolled. Only two of the 367 programme completers were from ethnic groups other than white British. Trends across the country indicate there is an increase in ethnic diversity and dispersion occurring (NOO, 2011) and by 2050 minority groups will represent 20% of the total population (Wohland, Rees, Norman, Boden & Jasinska, 2010). County Durham and Darlington can expect to experience the same changes. This predicted expansion, alongside the higher incidence of obesity, diabetes and cardiovascular disease that this population suffers (The NHS Information centre for Health and Social Care, 2004) underscores the need to understand recruitment and retention into local programmes much better.

4.4.4 Indices of Multiple Deprivation

The lack of detail on individual participant post codes limits the interpretation of IMD results since GP practices could well have been located in an entirely different area to a participant's residence. Nevertheless, some deductions are possible. Primarily, the median IMD GP practice score for programme completers (27.3) was considerably higher than the national average and higher than average scores for County Durham (27.1) and Darlington (24.2), suggesting recruitment was from more deprived practice locations within the region. Considering the health implications associated with deprivation, this engagement with more vulnerable areas is encouraging. Unfortunately, continued commitment presented a greater challenge. Non-completers had a median IMD score of

31.5 for their GP practice location, significantly worse than the 27.3 score for completers ($p < 0.001$). Early attraction followed by apparent disconnection raises important questions about the components of the programmes delivered and the ability to sustain the interest of people who may be less affluent.

4.4.5 Clinical Characteristics

Programme completers did not differ from non-completers in baseline weight, BMI, waist circumference or blood pressure readings, confirming findings by others and reiterating that these clinical characteristics are unlikely to be useful gauges for weight management programme outcomes (Roberts & Ashley, 1999).

4.4.6 Baseline characteristics According to Health Worker Groups

Most baseline characteristics did not differ between the three groups of health workers assessed. Dubious data entry for waist circumference and blood pressure plagued the comparison of these variables between workers. Although the results suggest nurses saw patients with a significantly lower systolic blood pressure than AA, and AA saw patients with trimmer waist lines, the poor data compromises confidence in these differences. A more convincing difference was that seen between worker type and GP practice IMD scores. AA and HCA working in GP practices with higher IMD scores were most likely to see the patients, and practices with lower scores were more prone to dedicate nurses to the delivery of group weight management programmes. The difference might be because of caseloads. Primary care consultation rates are known to be higher in more deprived areas (NOO, 2010). It is feasible that as the demand for the clinical skills of nurses

increases, perhaps so does the requirement for HCA or AA to step into weight management interventions in the absence of the nurses.

Generally the results indicated that workers saw similar patients in terms of age, gender and ethnicity; white, slightly older women. A recent report for the Department of Health (Rowe & Basi, 2010) confirms that group weight management programmes are most likely to attract a population fitting this description. Although it is reassuring that the people who completed local group interventions were no different to those who attend elsewhere in the country, it also exposes the restrictive nature of the local and national schemes. Regrettably, the number of population subdivisions for whom group intervention does not carry the same appeal is daunting and universal to all the workers in this evaluation.

Enticing a greater variety of participants by matching group attenders by age range, gender, ethnic background or socioeconomic status has some potential (Rowe & Basi, 2010; Gray et al., 2009; Bye, Avery & Lavin, 2005) and varying the content and philosophy according to attenders has also had some favourable results. A didactic style has been shown to appeal more to confident patients (Ogden & Hoppe, 1997). Inclusion of a work based, physical component delivered with a humorous touch captures the attention of men (Sabinsky, Toft, Raben & Holm, 2007; White & Pettifer, 2007), while glamorous and aspirational delivery appeals to younger people (Rowe & Basi, 2010). Access to culturally sensitive programmes and culturally relevant information are important to those from different ethnic backgrounds (Rowe & Basi, 2010).

Customising programmes unfortunately brings no guarantee of success. In a male only study, only eleven percent of men chose to attend, demonstrating that even with gender

specific programmes, engagement remains a challenge (Gray et al., 2009). Others warn of notoriously low attendance rates for people from ethnic minority backgrounds, even in the most culturally aware programmes (Rowe & Basi, 2010).

Without the promise of better outcomes, implementing resource intensive tactics to try to improve the uptake of programmes could be hasty. Perhaps it is more perceptive and wise to accept that 'one size does not fit all' and that group weight management programmes are only part of a wider solution to effective weight management in primary care.

5. STUDY LIMITATIONS

The evaluation has several limitations. Firstly, the study's data was based on 'real life' working environments in primary care. Patient recruitment methods were not intended to be controlled or randomised. Consequently, the number of data entries for each professional grouping was skewed towards nurses, who had substantially more entries than either HCA or AA. The design also helps explain the absence of normal distribution across almost all of the variables investigated. Non parametric tests were mostly adopted because of this, and these are less sensitive than the parametric equivalent and increase the risk of a type I error (Pallant, 2005).

There was a considerable amount of erroneous and missing data with clear implications for the validity of results; very high attrition rates are also likely to bias outcomes. Outcomes by health worker were reported for programme completers only. This may have overestimated weight loss achievements of the programmes because those who completed may have attained greater losses than those who do not. In random controlled trials this can be accounted for to some extent by using intention to treat analysis, a technique not appropriate for this retrospective evaluation.

The lack of randomisation means that it is possible that participants could have been different from the general population in a number of ways. Patient details such as medications, past medical and dieting history, exercise and smoking status were not monitored or accounted for. The particulars of individual programmes such as content, contact frequency, group demographics and size were unknown. Data input techniques and equipment used by each health worker were undetermined. While the initiative was never intended to capture such detailed information, its absence makes it more difficult to

determine that the differences found were down to health worker group alone. Generalisation is therefore limited and highlights the importance of an equivalent clinically controlled trial. Nevertheless, the outcomes of this exploratory study of everyday practice have a useful and pragmatic place. Transferring the findings of tightly controlled trials for weight management have not always resulted in positive outcomes, and led to some experts to call for more research in 'real world' settings (Swinburn, Caterson, Seidell, & James, 2004). This investigation provides a naturalistic assessment of typical primary care delivery of weight management programmes, without the restrictions and interference that large studies in controlled environments can bring.

Grouping health professional into three categories is a further inadequacy of the assessment. Although sorting in this way allowed the retention of less well represented professionals and the categories were designed to try to reflect a similar clinical skill level within them, the method means that results can only be attributed to these categories of workers, rather than to single professions. Importantly, some professions were not represented at all, notably dietitians, psychologists and doctors, who might be expected to have a more conspicuous contribution. This absence of certain professional groups restricts wider comparisons with the existing literature.

Finally, this evaluation is unable to provide an insight into weight loss achievements beyond twelve weeks and this lack of longer term assessment unfortunately limits its wider value considerably.

6. CONCLUSION AND RECOMMENDATIONS

Hypothesis One. The hypothesis that different health care workers delivering group weight management programmes do not produce significantly different outcomes can be rejected. This evaluation of programmes in County Durham and Darlington primary care found that there was a difference.

Hypothesis Two. Attendance rates of group weight management programmes in County Durham and Darlington primary care did not differ according to who delivered them, and so this hypothesis is accepted.

Hypothesis Three. Different health workers who delivered group programmes in the region saw similar patients according to age, gender, ethnicity and clinical characteristics and therefore this hypothesis is also accepted. However a difference was detected for IMD GP practice scores.

This evaluation indicates that group weight management programmes delivered by a variety of primary care workers in County Durham and Darlington can achieve moderate short term weight loss for participants who continue to attend and this was clinically significant for some. Staff in assistant medical roles were able to help patients lose weight, reduce their waist circumference and decrease their BMI significantly more than workers with greater clinical qualifications. These results imply that less qualified staff are equally capable of producing meaningful weight loss results. However, shortfalls in clinical data entry suggest some measurements were problematic for assistants and this may be due to the more advanced clinical abilities needed to attain them. Services and the workforce therefore need to be organised and planned to play to the strengths of both support staff

and those who are more highly trained to provide optimal economic and clinically effective group interventions.

High attrition overshadowed all health care workers and this unfortunately trivialises who is the most effective deliverer when the beneficiaries are so few. If primary care group weight management programmes in County Durham and Darlington are to continue, it is vital that the problem is better understood and tackled.

Men, younger people and ethnic minority populations underutilised group weight management interventions in the area. These findings could help improve the wider appeal of group programmes, by guiding adaptations to match these target populations better. Importantly, the results also remind us that group interventions, although a useful tool against the growing problem of obesity, are never likely to suit everyone.

Providing a comprehensive range of weight management interventions by exploiting the excellent skill mix found in primary care health workers is likely to be the best solution to a diverse problem. The challenge of piecing together 'who should do what' would perhaps be made easier if the evidence base for 'who does what best' can be progressed.

Implications

As a result of this evaluation of group weight management programme in County Durham and Darlington, the following suggestions are made:

Local Delivery of Group Weight Management Services

- The primary focus must be on improving attendance. An exploration into what motivated patients to complete programmes and a satisfaction enquiry directed at

the patients who did not is needed to understand the reasons for high attrition.

This will enable service planners to organise and deliverers to customise local programmes accordingly.

- When designing services, workforce skills should be carefully matched to the objectives of particular interventions for maximum efficiency and effectiveness.
- Development of assessment tools to help clinicians decide who is likely to benefit most from interventions would be beneficial but careful consideration is required as to how primary care might cope with the scale of such a duty.
- To improve the appeal of local group weight management programmes, an investigation into why men, younger people and those from ethnic minority backgrounds did not readily participate is required.
- Future training programmes for staff need to be tailored to their expressed needs.
- Data collection techniques need to be refined so that they allow reliable and sufficient entries to be made for surveillance of longer term outcomes.

Research

- More robust exploration of weight loss and clinical outcomes between the professional groups via clinically controlled trials.
- Cost effectiveness analysis and economic comparison of the delivery of group weight management programmes between various primary care workers.

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UNIT TITLE: Understanding Nutrition and Weight Management

LEVEL: Two
CREDIT VALUE: 6
GLH: 48
NOCN UNIT CODE: PA1/2/QQ/005
ACCREDITED UNIT NO: J/500/5087

This unit has 5 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand the importance of adequate nutrition. (HSC23; KSF HWB1, HWB3) (SLc/L2.4)	1.1 Describe the function of carbohydrate, fat, protein, water, vitamins and minerals. 1.2 Identify common dietary sources of carbohydrate, fat, protein, water, vitamins and minerals. 1.3 Describe the link between nutrition and disease.
2. Understand the components of a healthy diet. (HSC23; KSF HWB4)	2.1 Outline government guidelines for energy, fat, protein, carbohydrate and alcohol intake. 2.2 Describe how to decrease fat, sugar, salt and increase fibre content of the diet. 2.3 Outline general dietary guidelines and the five food groups. 2.4 Give examples of preferred food choices in each of the five food groups.
3. Give recommendations for healthy eating in and away from the home. (HSC23; KSF HWB1, HWB3) (SLc/L2.4)	3.1 Explain healthy food options when eating at home. 3.2 Explain healthy food options for two different occasions of eating away from home. 3.3 Assess a range of diets and give recommendations for improvement.

Mapped to Health and Social Care NOS, Skills for Care & Development, 2005.
 Mapped to NHS Knowledge and Skills Framework 2005.
 Mapped to the Adult Literacy Core Curriculum, 2001.

Please note: Achievement of this unit does not provide evidence against the Care Standards Act requirements.

UNIT TITLE: Understanding Nutrition and Weight Management

LEVEL: Two
CREDIT VALUE: 6
GLH: 48
NOCN UNIT CODE: PA1/2/QQ/005
ACCREDITED UNIT NO: J/500/5087

LEARNING OUTCOMES	ASSESSMENT CRITERIA
<p>The learner will:</p> <p>4. Understand effective methods of weight loss. (HSC23; KSF HWB1, HWB3) (SLc/L2.4)</p>	<p>The learner can:</p> <p>4.1 Define obesity and outline the health risks of excess body fat. 4.2 Describe the energy balance equation. 4.3 Describe the characteristics of an effective weight management programme. 4.4 Identify weight loss myths and problems with some diet products.</p>
<p>5. Plan a weight management programme for a selected individual. (SLc/L2.3; SLcL2.4)</p>	<p>5.1 Collect relevant information to plan a weight management programme. 5.2 Identify suitable goals for the weight management programme. 5.3 Plan a three week weight management programme incorporating exercise and dietary modifications.</p>

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Mapped to Health and Social Care NOS, Skills for Care & Development, 2005.
Mapped to NHS Knowledge and Skills Framework 2005.
Mapped to the Adult Literacy Core Curriculum, 2001.

Please note: Achievement of this unit does not provide evidence against the Care Standards Act requirements.

UNIT TITLE: Understanding Nutrition and Weight Management

LEVEL: Two
CREDIT VALUE: 6
GLH: 48
NOCN UNIT CODE: PA1/2/QQ/005
ACCREDITED UNIT NO: J/500/5087

ASSESSMENT INFORMATION

Guidance:

This grid gives details of the assessment activities to be used with the unit attached. Please refer to the NOCN Centre Handbook for definitions of each activity and the expectations for assessment practice and evidence for moderation.

The assessment activities for this unit are indicated in the table below:

Key: P = Prescribed – this assessment method *must* be used to assess the unit.

O = Optional – this assessment method *could* be used to assess the unit.

Case study		Project	
Written question & answer/test/exam	O	Role play/simulation	
Essay	O	Practical demonstration	
Report		Group discussion	O
Oral question and answer	O	Performance/exhibition	
Written description	O	Production of artefact	
Reflective log / diary		Practice file	

Signposting Key Skills

This unit offers clear opportunities for learners to provide evidence of achievement in Key Skills achievement in the following skill area/s:

Key Skill		Wider Key Skill	
Communication	✓	Working with others	
Information Technology		Problem solving	
Application of Number	✓	Improving Own Learning and Performance	

Appendix 2. Data Collection Sheet

Weight Management Monitoring Form – Weeks 1, 6 and 12

**Public Health
County Durham and Darlington**

Advisor name completing form: _____ **Date:** _____

Locality: _____ **Practice:** _____

Weight Management Programme being followed:

Weight No More Primary Care ☐ Primary Care Staff Only

Weight No More Community ☐ E.g. multi agency partners etc

One Life ☐

Get Active Weight No More ☐

Other ☐ (*please specify*) _____

Group Consultation ☐ **OR** One to One Consultation ☐

Referred into service by:Practice Staff ☐ Health Visitor ☐ Health Trainer ☐

Dietician ☐ Weight No More Advisor ☐ Self Referral ☐

Other ☐ (*please specify*) _____

1. NHS no :

--	--	--	--	--	--	--	--	--

2. Name:

[illegible][illegible]

4. Postcode:

5. Gender: Male ☐ Female ☐

6. DOB :

--	--

--	--

--	--	--	--

7. Ethnic Group:

White:

White British ☐

White Irish ☐

Eastern Europe ☐

Asian or Asian British:

Indian ☐

Pakistani ☐

Bangladeshi ☐

Any other Asian Background ☐

Not stated ☐

Mixed:

White and Black Caribbean	<input type="checkbox"/>
White and Black African	<input type="checkbox"/>
White and Asian	<input type="checkbox"/>
Any other mixed background	<input type="checkbox"/>

Any other mixed background ☐

Black or Black British:

Caribbean ☐

African ☐

Any other black background ☐

Other ethnic minorities:

Chinese ☐

7. To be completed @ weeks 1, 6 and 12

	Week 1	Week 6	Week 12
Date (add @ Week 1, 6 & 12):			
Activity level* Inactive – I am wheel chair bound or I find movement difficult Light – I do some daily exercise about the house and garden. I spend at least 2 hours on my feet. Moderate – I spend at least 6 hours on my feet or I have regular strenuous exercise Heavy – I have a heavy labouring job or I am an athlete in training.	(<i>Tick Option</i>) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	(<i>Tick Option</i>) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	(<i>Tick Option</i>) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Motivation rating* - 1 2 3 4 5 (1=Low & 5 =High)	Rating:	Rating:	Rating:
Self esteem rating* - 1 2 3 4 5 (1=Low & 5 =High)	Rating:	Rating:	Rating:
Confidence rating* - 1 2 3 4 5 (1=Low & 5 =High)	Rating:	Rating:	Rating:
Smoker?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>
*Client Perceived rating			

8. Monitoring/progress form

	Week 1	Week 6	Week 12
Date (add @ Week 1, 6 & 12):			
Weight (kg)			
Height (metres) (week one only)			
Waist circumference (optional)			
BP Pressure (optional)			

9. If DNA specify week number _____

10. Reason for DNA _____ (please see DNA guide)

11. Existing Drug Therapy? Yes/No (*circle*)

If Yes (*please specify*) Orlistat ☐ Sibutramine ☐ Other ☐ Not Known ☐

Following Completion of Weight Management Programme is the patient /client accessing any of the following?

Commercial Weight Management	<input type="checkbox"/>	Exercise Referral Programme	<input type="checkbox"/>
Further Weight Management Programme	<input type="checkbox"/>	Health Trainer	<input type="checkbox"/>
Secondary Care	<input type="checkbox"/>	No further Intervention	<input type="checkbox"/>
Other (<i>please specify</i>) _____			

Please complete and return copy at end of week 12, or when DNA.

Return to:



National Research Ethics Service

County Durham & Tees Valley 2 Research Ethics Committee

The Tatchell Centre
University Hospital of North Tees
Piperknowle Road
Stockton-on-Tees
TS19 8PE

Telephone: 01642 624164
Facsimile: 01642 624164
Email: leigh.pollard@nhs.net

10 December 2009

Ms D Shotton
Weight Management & Lead Dietitian
South Durham Nutrition & Dietetic Service
Bishop Auckland Hospital
Escomb Road Annexe - Escomb Road
Bishop Auckland
DL14 6AB

Dear Ms Shotton

Full title of project: Evaluation of an Established Group Weight Management Service: What Does It Achieve?

Thank you for seeking the Committee's advice about the above project. You provided the following documents for consideration:

Research proposal – dated 27 November 2009

This document has been considered by the Chair, who has advised that the project does not require ethical review by a NHS Research Ethics Committee.

This letter should not be interpreted as giving a form of ethical approval to the project or any endorsement of the project, but it may be provided to a journal or other body as evidence that ethical approval is not required under NHS research governance arrangements.

However, if you, your sponsor/funder or any NHS organisation feels that the project should be managed as research and/or that ethical review by a NHS REC is essential, please write setting out your reasons and we will be pleased to consider further.

Yours sincerely

Leigh Pollard
Leigh Pollard
Committee Co-ordinator

Copy to: R&D Office, County Durham PCT, John Snow House, University Science Park,
Durham, DH1 3YG



NHS County Durham
and NHS Darlington

County Durham & Tees Valley Primary Care Trusts'
Research Management & Governance Unit
John Snow House
Durham University Science Park
Durham
DH1 3YG
www.countydurhampct.nhs.uk

Our ref: RE-668

Direct Line: 0191 374 4211

Email: richard.errington@nhs.net

16 December 2009

Dawn Shotton
Weight Management Lead Dietician
Escomb Road Annexe
Bishop Auckland

Dear Dawn,

Evaluation of an Established Group Weight Management Service: What Does It Achieve?

I am writing to confirm that the above project will not require research governance approval from NHS Darlington.

This project has been classed as service evaluation by the Research Management & Governance Lead. Details will be forwarded to the Clinical Audit Lead for NHS Darlington for internal registration.

I wish you success with your project.

Yours sincerely,

R. Errington

Richard Errington
RM&G Unit Lead

Dawn Shotton

20th September 2010

Dear Dawn,

Study title: Evaluation of a community group weight management programme: does the deliverer influence outcomes?
FREC reference: 455/10/DS/CENS
Version number: 1

Thank you for sending your application to the Faculty of Applied Sciences Research Ethics Committee for review.

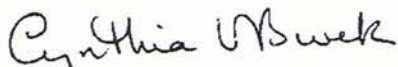
I am pleased to confirm a favourable ethical opinion for the above research, provided that you comply with the conditions set out in the attached document, and adhere to the processes described in your application form and supporting documentation.

The final list of documents reviewed and approved by the Committee is as follows:

Document	Version	Date
Application Form	1	June 2010
Response to FREC request for further information and clarification	1	September 2010

With the Committee's best wishes for the success of this project.

Yours sincerely,



Prof. Cynthia Burek
Chair, Faculty Research Ethics Committee

Enclosures Standard conditions of approval.

c.c. Supervisor
FREC Representative

Appendix 4. PCT Patient Consent Form



County Durham and Darlington
Community Health Services

'Weight No More' – Information Consent Form

I consent to my details being stored by County Durham Primary Care Trust and Darlington Primary Care Trust for the purpose of reporting and evaluation only

Print
name: _____

Signed: _____ Date: ____/____/____

Appendix 5. SPSS Statistical Output Tables

Statistical Outputs for Significant Differences in Clinical Outcomes by Health Worker

1. Weight changes

Weight Changes	
	last recorded weight change carried forward
Chi-Square	7.239
df	2
Asymp. Sig.	.027

a. Kruskal Wallis Test

b. Grouping Variable: Professional role of Health Worker

Post Hoc Test

Ranks				
	Professional role of Health Worker	N	Mean Rank	Sum of Ranks
last recorded weight change carried forward	HCA	118	155.87	18392.50
	N	233	186.20	43383.50
	Total	351		

Test Statistics ^a	
	last recorded weight change carried forward
Mann-Whitney U	11371.500
Wilcoxon W	18392.500
Z	-2.646
Asymp. Sig. (2-tailed)	.008

a. Grouping Variable: Professional role of Health Worker

2. Waist Circumference Changes

Ranks				
	Professional role of Health Worker	N	Mean Rank	Sum of Ranks
waistchange12	HCA	91	104.57	9515.50
	N	163	140.30	22869.50
	Total	254		

Test Statistics ^a	
	waistchange12
Mann-Whitney U	5329.500
Wilcoxon W	9515.500
Z	-3.726
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Professional role of Health Worker

3. BMI changes

BMI	
	Last recorded BMI change carried forward
Chi-Square	7.696
df	2
Asymp. Sig.	.021

a. Kruskal Wallis Test

b. Grouping Variable: Professional role of Health Worker

Post Hoc Test

Ranks				
	Professional role of Health Worker	N	Mean Rank	Sum of Ranks
Last recorded BMI change carried forward	HCA	117	154.32	18055.50
	N	232	185.43	43019.50
	Total	349		

Test Statistics^a

	Last recorded BMI change carried forward
Mann-Whitney U	11152.500
Wilcoxon W	18055.500
Z	-2.719
Asymp. Sig. (2-tailed)	.007

a. Grouping Variable: Professional role of Health Worker

4. Systolic Blood Pressure Changes

Ranks

	Professional role of Health Worker	N	Mean Rank	Sum of Ranks
Systolic BP change after 12 weeks	HCA	47	51.93	2440.50
	N	58	53.87	3124.50
	Total	105		

Test Statistics^a

	Systolic BP change after 12 weeks
Mann-Whitney U	1312.500
Wilcoxon W	2440.500
Z	-.326
Asymp. Sig. (2-tailed)	.745

a. Grouping Variable: Professional role of Health Worker

5. Diastolic Blood Pressure Changes

Group Statistics

	Professional role of Health Worker	N	Mean	Std. Deviation	Std. Error Mean
Diastolic BP change after 12 weeks	HCA	45	-5.0444	11.23095	1.67421
	N	57	-1.8772	8.02022	1.06230

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Diastolic BP change after 12 weeks	Equal variances assumed	5.224	.024	-1.660	100	.100	-3.16725	1.90772	-6.95212	.61762
	Equal variances not assumed			-1.597	76.782	.114	-3.16725	1.98279	-7.11568	.78118

Statistical Output for Attendance Rates

Ranks

	Professional role of Health Worker	N	Mean Rank
Number of sessions attended out of 12 weeks	HCA	124	178.77
	N	252	193.29
	Total	376	

Test Statistics^{a,b}

	Number of sessions attended out of 12 weeks
Chi-Square	1.505
df	1
Asymp. Sig.	.220

a. Kruskal Wallis Test

b. Grouping Variable: Professional role of Health Worker

Statistical Outputs for Significant Differences in Patient Characteristics by Health Worker

Total Completers

Mann-Whitney u Age

	Age on programme delivery
Mann-Whitney U	34558.000
Wilcoxon W	115964.000
Z	-3.729
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: None completers Completers only

Mann-Whitney u Indices Multiple Deprivation

	Indices of Multiple deprivation for practice area
Mann-Whitney U	90147.500
Wilcoxon W	157675.500
Z	-4.961
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: None completers Completers only

Health Worker Group

1. IMD

Indicies Multiple Deprivation

	Professional role of Health Worker	N	Mean Rank
Indices of Multiple deprivation for practice area	AA	38	684.61
	HCA	337	589.07
	N	598	416.92
	Total	973	

Kruskal Wallis Test Indicies Multiple Deprivation

	Indices of Multiple deprivation for practice area
Chi-Square	100.644
df	2
Asymp. Sig.	.000

a. Kruskal Wallis Test

b. Grouping Variable: Professional role of Health Worker

2. Waist Circumference

Ranks

	Professional role of Health Worker	N	Mean Rank
Waist.1	AA	30	274.97
	HCA	294	427.11
	N	521	429.21
	Total	845	

Test Statistics^{a,b}

	Waist.1
Chi-Square	11.463
df	2
Asymp. Sig.	.003

a. Kruskal Wallis Test

b. Grouping Variable: Professional role of Health Worker

3. Systolic Blood Pressure

Ranks

	Professional role of Health Worker	N	Mean Rank
Systolic BP at week 1	AA	22	267.70
	HCA	152	209.86
	N	236	196.90
	Total	410	

Test Statistics^{a,b}

	Systolic BP at week 1
Chi-Square	7.558
df	2
Asymp. Sig.	.023

a. Kruskal Wallis Test

b. Grouping Variable: Professional role of Health Worker

4. Diastolic Blood Pressure

Ranks

	Professional role of Health Worker	N	Mean Rank
Diastolic BP at week 1	AA	22	158.43
	HCA	153	222.44
	N	234	197.97
	Total	409	

Test Statistics^{a,b}

	Diastolic BP at week 1
Chi-Square	7.674
df	2
Asymp. Sig.	.022

a. Kruskal Wallis Test

b. Grouping Variable: Professional role of Health Worker